National Aeronautics and Space Administration

Technology Opportunity

Technology Transfer & Partnership Office

TOP3–00224

Power Systems Facility

Facility

The Power Systems Facility (PSF) provides an exceptional platform to not only test and verify today's space power systems, but also to design, develop, and test components and systems for new technologies.

Facility Description

The PSF supports the design, development, assembly, and testing of space power components and systems that includes the International Space Station (ISS), satellites, next-generation launch vehicles, and space-based power systems. PSF houses testbeds where experienced scientists and engineers verify critical concepts, test prototype hardware and software, and validate systems in real-time simulations under actual loading and operating conditions. Testing capabilities include flywheel systems and components, battery systems, fuel cells, AC power sources, electrical actuators, and power management and distribution hardware and software. An adjacent solar array field provides 960 solar cell modules to power system hardware during testing.

Facility Benefits

- PSF provides a 9,000-square-foot, class 100,000, 60-foot Hi-Bay cleanroom
- Provides the capability to easily connect test areas in PSF to support system-level testing of large power systems
- A 1,600-square-foot raised floor area to support power management and distribution in systems development
- The Telescience Support Center (TSC) provides the capability to execute ground support operations of on-orbit ISS payloads and other space missions
- Solar array—30 kW at 160 V maximum
- CD power—over 500 kW
- Loads—Full spectrum of AC and DC programmable electrical loads for constant power, current, voltage, and resistance modes of operation
- Cyclic Spin Facility (CSF)—Life cycle and proof testing of flywheel rotors with speeds up to 60,000 rpm
- High Energy Flywheel Facilities (HEFF1 and HEFF2)—testing of multiple axis energy storage flywheels
- Power Electronics Lab (PEL)—Testing of electronic components and breadboards

Electric power systems testbed.

Programs and Projects Supported

- End-to-end testing of the ISS power system
- Flywheel systems and components testing
- Electric actuators
- AC/DC power sources and loads
- Prometheus
- Flywheel uninterruptible power systems (UPS) demonstration
- End-to-end power system integration testing

Facility Testing Information

http://facilities.grc.nasa.gov

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Telescience Support Center.

Power Systems Facility's Hi-Bay cleanroom.

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